July-Dec. 1994

NORTH QUEENSLAND NATURALISTS CLUB

EDITION 198

P.O. BOX 991 CAIRNS QLD. 4870
PH. 531183

FOUNDER PRESIDENT: *The late DR. HUGO FLECKER*
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OBJECTS: The furtherance of the study of the various branches of Natural History and the preservation of our heritage of indigenous flora and fauna.

MEETINGS: Second Tuesday of each month at 8pm at the Cairns Education Centre, Greenslopes Street, Edgehill, Cairns.

FIELD DAYS: Sunday before meeting.

CLUB OFFICERS:

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SUBSCRIPTIONS: (Due September 30th)

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FROM THE EDITOR

Yet another year has slipped by. Some great field trips and camps were enjoyed by all those who attended. The new list of venues for the first half of 1995 has already been set so check with Dawn Magarry if you havn't received your copy. Some of the highlights of the past year were the last Sunday outing (6th Nov) to Pete's Falls (left off Gillies Highway at the Goldsborough turnoff), with the campouts at Woodlands Caravan Park, Atherton and the Nilita Scout Hut (El Arish) proving two camp venues which offered both new and interesting observations. If any members happen to visit an interesting area and you think if would be an ideal NATS venue - lets hear about it so we may consider it for the next list of club outings.

In this issue we begin recounting some 'behind the scientific scene' short stories by William Hosmer. We learn to appreciate William's sense of humour as well as his impeccable knowledge of reptiles and amphibians world wide. Here we will share his opinion on a simple and effective way to eradicate toads (Bufo Marinus) from Australia. I trust the articles shall be as enjoyable to you as they were to me in recording and transcribing (from the tapes) William's zoogeographical experiences.

OUR COVER: Original drawing by Brenda Moller of El Arish of the Coral Cod (Cephalopholis miniatus) with characteristic brilliant blue spots over a scarlet body. The Coral Cod differs from the Coral Trout (Plectropoma maculatum) in having a rounded tail as opposed to the emarginate (curved inwards) tail shape of the latter.

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TROPICAL SLUGS

by: Bronwen Scott
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What are slugs?
There is little difference between snails and slugs. In snails, the shell protects the mantle, a cloak-like flap of tissue which encloses the lung, and in which is embedded the heart and kidney. Below the mantle lies the visceral mass which contains the digestive, excretory and reproductive systems, coiled together in the apex of the shell. Once the shell has been reduced or lost, the visceral mass becomes vulnerable to damage or desiccation. Slugs have solved this problem by incorporating the visceral mass, heart and kidney in the foot. The mantle still encloses the lung, drawing air in through an opening called the pneumostome.

What are the advantages offered by shell loss?
The shell provides protection from predators and water loss, but it is also bulky and requires a lot of energy to produce. Slugs have lost the protection offered by the shell, but compensate for this by being able to burrow into the soil or to crawl into tiny crevices in rocks and logs, habitats which would be unavailable to a shelled snail. The trend towards shell reduction and loss is so common that is has occurred repeatedly in land snail evolution. This means that, although all slugs look the same, the slug form has evolved independently many times.

Slugs, like most land snails, are hermaphroditic, so each adult can produce viable eggs through cross-fertilisation. Some species self-fertilise, while others are parthenogenetic, giving rise to offspring which are genetically identical to the parent. This interesting phenomenon occurs during the invasion of new areas by at least one species of pest slug. Those best suited to exploit this fresh, untested habitat are the ones that will survive to produce offspring. Under these circumstances the generation of clones - which are well suited to this new habitat as their parents - allows large numbers of the slugs to build up with a minimum loss before reverting to the more usual mode of reproduction.

Slugs in the Tropics
Slugs are found worldwide, but are most diverse in the Northern Hemisphere. This may be an artefact of the intensity of study devoted to the faunas of North America, Europe and northern Asia, and the previous lack of interest in our tropical slugs. As far as we know native slugs are neither common nor diverse in northern Australia. Two families of true slugs are known to occur naturally in north-eastern Queensland, together with a family of semi-slugs (which retain a thin, glossy shell).

Athoracophoridae, or red-triangle slugs, occur in eastern Australia (as far south as Wollongong), New Zealand, New

Caledonia, Vanuatu and parts of New Guinea. These slugs vary widely in colour, from white to green to orange or scarlet, but each slug possesses a red triangle which outlines the mantle. The apex of the triangle is on the right-hand side and enclosed the pneumostome.

Red-triangle slugs are arboreal, moving about on the bark of trees at night. Their nocturnal habits mean they are rarely seen and even more rarely collected in the tropics, although they are abundant (or less cryptic) in southern Queensland and New South Wales. It has long been believed that only one widespread species occurs in Australia, but this will probably be split into at least six species.

Carnivorous slugs of the family **Rathousiidae** are poorly-known. They live in the rainforest soil where they feed on earthworms and other soft-bodied prey. They are small, brown slugs, which are distinctly triangular in cross-section. Rathousiid slugs have an unusual defence mechanism: when disturbed the slug stiffens its body and dries out, so it looks more like a piece of forest debris than a potential meal. The mucous coating, which might identify the slug, is either instantly shed or reabsorbed (how it achieves this is unknown), while the slug's body contracts and is held rigid. Once the danger has passed the slug resumes its normal activity, secreting mucous and gliding about in standard slug fashion.

Semi-slugs **Helicarionidae** are the most diverse and common of the tropical slugs. They are known as semi-slugs because all species retain some element of the shell, whether it is a thin transparent version of a normal snail shell or a glossy plate embedded in the skin of the dorsal surface. The end of the foot of all helicarionids is folded to form an upward-tilted tail, which is characteristic of all semi-slugs. Like the rathousiids, some species have odd ways of deterring predators. Some species secrete orange mucous when disturbed, different to that produced during normal activity, and this may contain unpalatable chemicals (I havn't tasted it, and I don't know anyone who has!). Others thrash about when picked up. Combined with the production of copious liquid slime, this relatively violent movement may make it difficult for a bird or other predator to hold onto a meal. Finally, the semi-slugs have the ability to drop their tails when attacked. The tail may move around for several hours afterwards, while the rest of the slug makes its getaway.

Two species of slug have been introduced from other tropical areas. Both belong to the family **Veronicellidae** and may be pests of market gardens. They live in the soil or under plant pots. The mantle is distinct and covers the whole foot, so a contracted slug looks a bit like a limpet with a soft shell. Two pairs of tentacles extend from underneath the rim of the mantle: the upper pair has eyes, while the lower pair is divided into two sensory lobes. They are rarely seen, but probably occur in large numbers in cultivated areas.

Other introduced slugs may occur in tropical Queensland, but information is scarce. Slugs are restricted by the need for moisture (water evaporates from slugs and snails at the same rate it does from an open dish), so they are found in well watered areas, such as gardens and parks. This means that they may thrive in gardens in places such as Cloncurry and Mt Isa, although they would never survive in the bush surrounding these localities.

Are slugs pests in north Queensland?
It is unlikely that native slugs will present a problem. The veronicellids and other introduced slugs may damage fruit and vegetables, as do introduced snails such as Helix aspersa and Bradybaena similaris, but it's up to the grower to decide whether the damage caused is worth the expense of setting snail-baits. Metaldehyde, the main constituent of many snail-specific poisons, breaks down in wet conditions, and slugs and snails which consume apparently-lethal doses may recover if they also absorb enough moisture. Perhaps the most effective and enviromentally-friendly way of controlling these pests is to clear hiding-places away from the vegie patch. Slugs and snails spend the day in cool, dark places, such as piles of old concrete blocks, bricks, tyres and wood (as do cane toads and spiders), so a tidy vegie patch may deter pests.

NATIVE AND INTRODUCED SLUGS

Athoracophoridae (Fig. 1)
This group of slugs occurs in Australia, New Zealand, New Caladonia, Vanatu and Papua New Guinea. They feed on fungi and algae, leaving characteristic feeding trails on smooth-barked trees.

Rathousiidae (Fig. 2)
Very little is known about these slugs, which are found in Australia and South-East Asia. They are small and nondescript but have extraordinary ability to 'dry out' and go rigid when disturbed, so they look like a piece of twig. They are thought to be carnivorous, preying on other soft-bodied invertebrates, including other slugs and snails.

Cystopeltidae (Fig. 3)
The Cystopeltidae is a family of slugs unique to Australia. They are found in eucalypt woodland and heathland in Victoria, southern New South Wales and Tasmania. They appear to be half-way between a slug and a snail, with the internal organs contained in a large sac on the upper side of the body.

Veronicellidae (Fig. 4)
These large, brown slugs are superficially similar to the red-triangle slugs Athoracophoridae. Among the main differences are the number and form of the tentacles. The veronicellids have two pairs, of which the lower are bilobed. This contrasts with the single pair of tentacles in the red-triangle slugs. The two species of veronicellids found in

Australia have been introduced from tropical Asia.

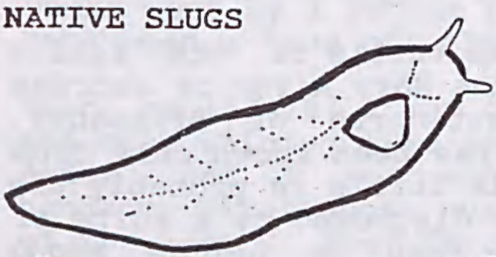
Arionidae (Fig. 5)
The arionids are not very good travellers and few species have been recorded from Australia. They are distinguished from other introduced European slugs by the lack of a keel and the forward position of the breathing pore.

Milicidae (Fig. 6)
The internal shell is well developed in the milacid slugs and takes the form of an oval plate. These slugs are separated from the closely-related limacids by the presence of a keel which runs along the back from the tail to the rear edge of the mantle, which is grooved. Some species may be pests. Milacids have been introduced from Europe.

Limacidae (Fig. 7)
The European limacid slugs are well established in Australia. At least five species have been introduced, including the leopard slug Limax maximus, which indulges in bizarre reproductive behaviour, mating upside down suspended from a thread of mucus. Limacids have a short keel, which does not extend to the mantle. The mantle itself is marked with fine concentric rings, like a finger print.

Testacellidae (Fig. 8)
These strange slugs live underground, burrowing through the soil in search of their prey - other slugs, earthworms and beetle larvae. They are occasionally found on the surface under logs and stones. Testacellids are immediately recognisable by the presence of a small, cap-shaped shell on the back close to the tail. They are probably not uncommon, but are rarely seen.

NATIVE SLUGS



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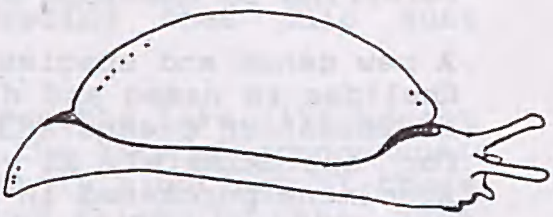

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INTRODUCED SLUGS

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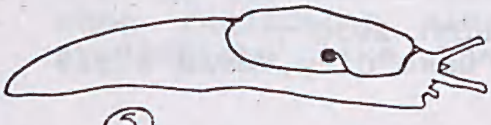

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NEW QUEENSLAND FOUND SKINKS AND TORTOISE FOR AUSTRALIA

Nangura spinosa gen. et sp. nov. is a very distinct member of the *Sphenomorphus* group. It resembles Gnypetoscincus queenslandiae superficially in being very spiny. It is, however, larger than *G. queenslandiae*, has supratemporal fossae (absent in *G. queenslandiae*), and a karyotype 2n=28 (vs 30). It also has an interparietal which totally separates the parietals. *Nangura spinosa* is the first reptile species known to be confined to the remnant dry rainforest (=semievergreen vine thickets) of southeastern Queensland. It is known only from Nangur State Forest which is now, like most semievergreen vine thickets in southeastern Queensland, in the care of the Queensland Forest Service.

J.A. Covacevich, P.J. Couper and C. James.
Queensland Museum, PO Box 3300, South Brisbane. Q. 4101.

Carlia parrhasius sp. nov. is described fron the Glennie Tableland, an isolated sandstone block on NE Cape York Peninsula approx. 60km NW of the Lockart Aboriginal Community. it is distinguished from its congeners by bold brown/black and white body stripes, combined with a fire-red tail. Parrhasius is for the Greek artist, Parrhasius, a master of deception through his work.

P.J. Couper, J.A. Covacevich and P.J. Lethbridge.
Queensland Museum, PO Box 3300, South Brisbane. Q. 4101.

The Mary River Tortoise, *Elusor macrurus*. (*Elusor*: L.*eludo*, to escape notice of; ergo, a contrived word of male gender connoting a frustratingly elusive thing, alluding to the cryptic provenance of this organism during the many years we knew it existed; *macrurus*: Gr. *makros*, long, + Gk. *oura*, tail; referring to the long and distinctively shaped tail.

A new genus and species of short-necked turtle of the family Chelidae is named and described from the Mary River of extreme southeastern Queensland, Australia (just north of Brisbane). For approximately 25 years the taxon has been known only from specimens purchased in pet shops. This turtle is probably the largest Australian shortneck and is diagnosed by a suite of characters, including a tail structure that is unique among chelids. The tail is laterally compressed and the distal caudal vertebrae bear haemal arches. The tail of adult males is larger than is any known chelid - up to 70% of the carapace length. Relationships to other chelids are not completely clear. Multidiscriminate analysis of 6 generic groups of shortnecks suggests membership of the new taxon in a group including *Elseya dentata*, *Elseya latisternum*, and *Rheodytes*. A preliminary cladistic analysis suggests the new taxon to be a sister group of *Rheodytes* and for both of these genera to be most closly related to *Elseya dentata*, with *Elseya latisternum* more distantly related to all three genera.

John Cann. 26 Yarra Road, Phillip Bay. NSW. 2036
John M. Legler. University of Utah, Salt Lake City, UTAH 84112

THE TINAROO REPORT

BY: Ben Constable

When water skiing was banned on Lake Tinaroo in August '93 because of the hazards created by drowned trees just beneath the surface, it had a serious effect on many businesses in Yungaburra. However it's an ill wind that blows nobody any good and while weekend sales of take-aways and fuel, like the lake itself, fell to an all-time low the resulting peaceful atmosphere proved to be an attraction to a variety of water birds benefiting those who gain pleasure from watching them.

After the lake reached its record low in January '94 (revealing the old Kulara bridge that had been submerged for nearly quarter of a century) enough rain fell to cause a thick crop of grass and weeds to spring up from the exposed lake bed. While this precipitation raised the water level to some extent it was not enough to completely inundate this vegetation which protruded (and still does) above the surface of the shallow water so providing concealment and a source of food for the birds in a belt 50m wide continuing along the shore for 300m from the boat ramp.

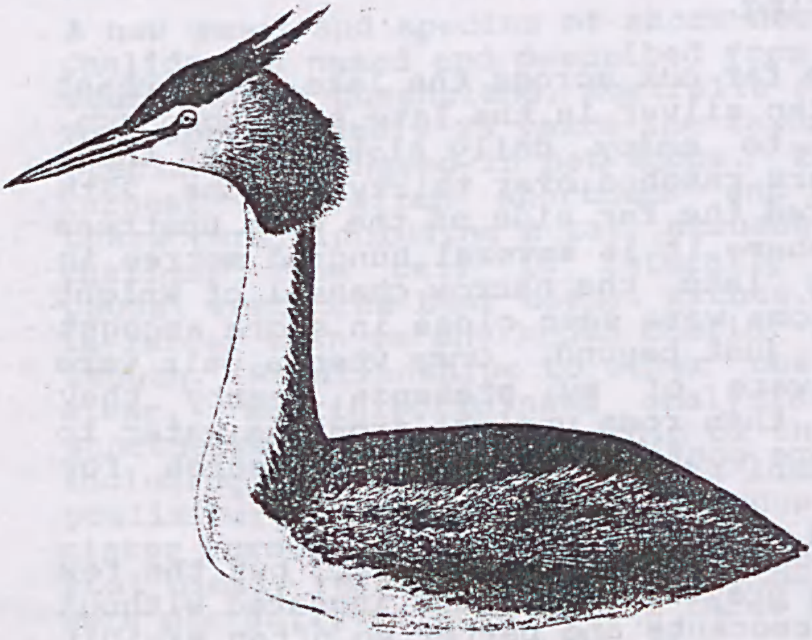
I was aware that Great Crested Grebe (Podiceps cristatus) had been seen on the lake, but although I was always on the look-out for them they did not appear at Tinaburra which I put down to the disturbing influence of visitors and their noisy machines. So, it was a pleasant surprise when on the afternoon of March 23rd I sighted one just outside the line of vegetation upstream from the old bridge site. I walked down from the high bank to get a closer view of the bird which then began a series of exaggerated zig-zags that took it progressively farther across the open water to the far bank. From then on I visited Tinaburra waters regularly, but as the weeks went by I became resigned to accepting that this must have been a 'one of' sighting.

Then on 12/4/94 I saw one far out across the lake, its breast and neck shining like molten silver in the late afternoon sun. After that I was able to enjoy daily sightings of these handsome birds whose numbers reached over thirty by the 25th of the month. They favoured the far side of the lake upstream from the old bridge site where it is several hundred metres in width before contracting into the narrow channel of Wright Creek, but occasionally some were seen close in shore amongst the flooded grasses or just beyond. Once when a pair were amongst the weeds and unaware of my presence nearby they turned to face each other, then rose upright from the water to touch breasts briefly before continuing to dive in search for food.

They seldom carried food to the surface to eat, but the few times I saw them do so the prey was small and ingested without any of the contortions Cormorants and Darter so often exhibit when swallowing sizable fish. Their diving was never predictable like the ducks that upend and Coots that signal their intentions by leaping upward to gain the impetus necessary to project them beneath the surface. From my observations Great Crested Grebes give no indication of their intent, one moment they are resting peacefully on the surface, the next they are gone leaving hardly a ripple on the water, as if they were suddenly dragged down by an irresistible submarine force.

After the flock peaked in April the numbers slumped dramatically leaving only one or two birds in the area, however, these were gradually added to until the middle of September (I counted seventeen), when again the numbers fell sharply. Both times the numbers fell it coincided with an invasion of Little Black Cormorants and their attending fellow travellers, the Large Black along with the opportunistic Pelicans. These flocks on both occasions exceeded 400 birds and as they stayed in the area for several days the competition for food must have been more than the Grebes could cope with. However, now in early October the numbers are once more building up and have already reached double figures.

Great Crested Grebes are not the only interesting birds to be seen in and around the lake. Swamp Harriers have been sighted more regularly than at any time during the previous ten years, not only along the creeks and the lake shore but coursing over the pastures and paddocks of corn stubble in the Marks Lane area. Pink Eared Duck have made several appearances, usually they are to be seen feeding in pairs but for a few days there was a flock of over thirty. A Bush Curlew hatched a pair of chicks near the caravan Kiosk, closed now for over a year, the hen sitting on the nest (?) in the broiling sun while the protective male sensibly conserving his energies for possible emergencies kept watch from beneath a shady bush.

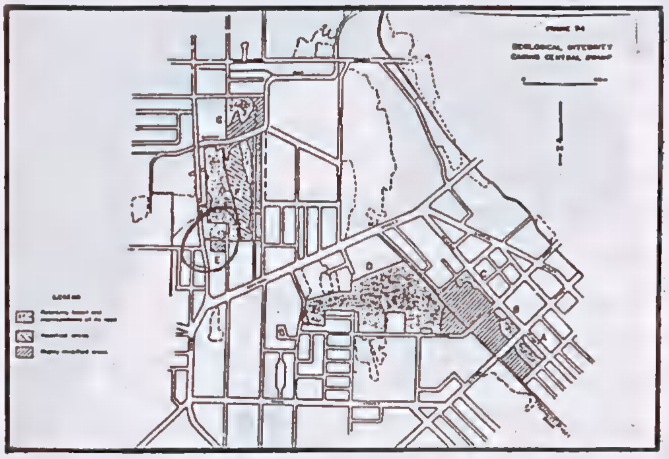


Apparently the resident Willie Wagtail recognized our car from the previous year as being a good source of nesting material and again greeted its arrival at the lake by collecting cobwebs from the grille, and when I opened the doors, from the dash as well. Spiders are an asset that every motorist should avail themselves of as they trap intrusive insects and obviate the need for fly sprays. At least that's my excuse for not disturbing them!!!

NOTES ON VEGETATION OF SECTION ‘E’ – CAIRNS CENTRAL SWAMP

BY: R. Jago

This small section contains some 61 species of plants, 46 species being native to the area, with 15 being introduced exotic species that have naturalized. This area is the smallest of any of the small parcels of land that make up the Cairns Central Swamp complex. Most of this small section has been degraded and is in need of rehabilitation. What little remains in a relatively undisturbed state contains several good specimens of tree species such as Dillenia alata and Syzyquim angophoroides etc.



For full size map:
Refer Jnl. 196 & 197

PRELIMINARY CHECK LIST OF VASCULAR PLANT SPECIES NATIVE TO SECTION ‘E’ CAIRNS CENTRAL SWAMP AND ASSOCIATED WETLANDS

PTERIDOPHYTES (Ferns)

Asplenium nidus	Birds nest fern	C
Drynaria rigidula	Basket fern	C
Lygodium flexuosum	Snake fern	C
Stenochlaena palustria	Climbing swamp fern	C

ANGIOSPERMS Dicotyledons (Flowering plants)

Acacia holosericea		U
Acmena hemilampra subsp. hemilampra	Cassowary gum	C
Beilschmiedia obtusifolia	Blush walnut	U
Carallia brachiata	Corky bark	C
Cayratia maritima	Native grape	U
Chionanthus ramiflorus	Native olive	C
Cissus repens	Native grape	U
Claoxylon tenerifolium		U
Clerodendrum longiflorum var. glabrum		C
Commersonia bartramia	Brown kurrajong	C
Cryptocarya triplinervis	Brown laurel	C
Dillenia alata	Red Beech	C
Ficus benjamina	Weeping fig	C
Ficus congesta	Red leaf fig	C

Gymnanthera nitida		U
Hibiscus tiliaceus	Cottonwood	C
Ichnocarpus frutescens		C
Jasminum didymum	Native jasmine	C
Litsea fawcettiana		U
Macaranga tanarius	Blush macaranga	C
Malaisia scandens	Crow ash vine	C
Melaleuca leucadendra	Tea tree	C
Melaleuca quinquenervia	Tea tree	C
Melia azedarach var. australasica	White cedar	C
Mischocarpus lanchnocarpus		C
Nauclea orientlis	Leichhardt tree	C
Randia fitzalani	Brown gardenia	C
Schefflera actinophylla	Umbrella tree	C
Sterculia quadrifida	Peanut tree	U
Syzygium angophoroides		C
Tabernaemontana orientalis		C
Terminalia sericocarpa	Damson	C
Vandasina retusa	Native wistaria	C

Monocotyledons

Archontophoenix alexandrae	Alexandra palm	C
Cordyline manners-suttoniae		C
Cyperus javanicus		U
Eustrephus latifolius	Wombat cherry	C
Flagellaria indica	Supplejack	C
Hypolytrum nemorum		C
Pandanus solmslaubachii		C
Proiphys amboinensis	Cardwell lily	C
Scleria polycarpa		U

NATURALIZED AND INTRODUCED SPECIES OF 'SECTION E'

Dicotyledons

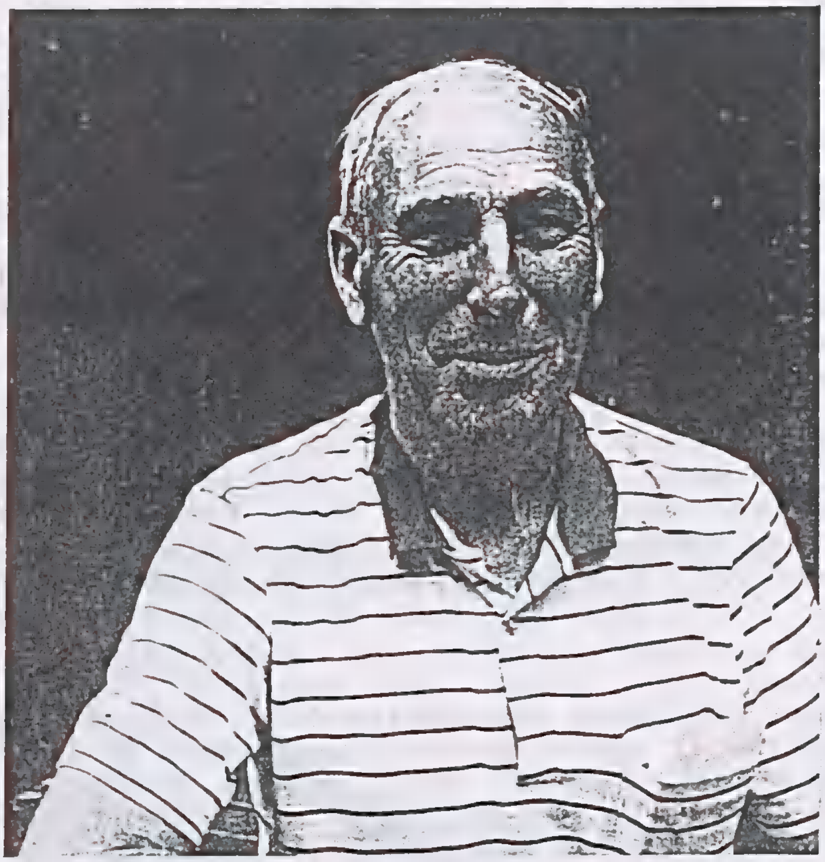
Ageratum conyzodes	Blue top weed	C
Annona reticulata	Bullocks heart	U
Capsicum annuum var. glabriusculum	Birds eye chilli	U
Crotalaria pallida	Streaked rattlepod	C
Ipomoea hederifolia		C
Macroptilium atropurpureum	Sirato	C
Mimosa pudica	Sensitive weed	C
Mitracarpus hirtus	Clover	C
Passiflora foetida	Stinking passion flower	C
Spathodea campanulata	Curse of West Africa	U
Solanum torvum	Devils fig	C
Urena lobata	Pink burr	C

Monocotyledons

Brachiaria mutica	Parra grass	C
Musa acuminata	Banana	C
Panicum maximum	Guinea grass	C

THE ANSWER TO TOAD (BUFO MARINUS) ERADICATION IN AUSTRALIA

BY: William Hosmer



WILLIAM HOSMER (12/3/94)

The toad eating snakes of the genus Heteroden are commonly called the **HARD NOSE** snakes of United States of America. They belong to the family Colubridae, which means it has solid teeth - no fangs, and is absolutely harmless. They possess an upturned snout for digging into the ground and thrive on species of toad of the genus Gunthold.

The toad eating snakes of the genus Heteroden are characterized by the possession of a strongly enlarged tooth at the posterior end of the maxilla.

They are specialized for eating toads. The large rear teeth puncture the lungs and thus deflate the air filled toad making it easier for the snake to swallow - even quite sizable toads. The snake possesses the ability to produce large amounts of hormones from their enlarged adrenal glands. This in turn counteracts the powerful skin poison of the toads. They too are nocturnal so that when the toads are active - so are the snakes.

The snakes of this genus Heteroden are quite harmless and inoffensive to humans and in fact play dead when interfered with. (They actually go stiff and look quite dead so when left alone for a while will slither off out of harms way).

During the time I was in the United States I had one for a pet which lived entirely on toads. I could introduce frogs i.e. Ancris (which is a tree frog of USA) but the snake would ignore it completely, preferable to the toad as it is the true diet of this particular snake.

Should this snake - under certain conditions - be brought into Australia by the C.S.I.R.O. and released when it was assured it would not interfere with native frogs, it could be released in strategic areas of Australia to break down the toad (Bufo marinus) populations.

There are three species of Heteroden in the United States:-
(1) Heteroden platyrhinos
(2) Heteroden similus
(3) Heteroden nasicus

The first H. platyrhinos is in the eastern states and would be appropriate for the East Coast of Australia. The second H. similus is from the southern and warmer areas of the United States and would be appropriate for the northern areas of Queensland and Northern Territory. The third species H. nasicus is equipped to live in the arid interior.

The snake would not attack adult toads. (It is not the mature toads we have to worry about). The snakes actually inhabit the banks of creeks and swamps where they feed on the juveniles as soon as they metamorphose to become a toadlet and start to climb up and onto the banks (which no doubt you've all seen on occasion). It is here the HARD NOSE snake likes to wait.

However, there are those who would say that should the snake be brought into Australia it could multiply in number so fast that it too may become a pest, but I know of no snake in Australia nor anywhere else in the world where snakes are in pest proportions. Snakes by nature are secretive and you very rarely see them. (You could walk through any part of our rainforest or elsewhere and rarely see a snake - eventhough we know they are there).

Snakes are certainly not a nuisance but, Bufo marinus is!

GREEN TREE FROG

Rock-a-bye, rock-a-bye, frog on a bough,
Sleeping the daylight hours away;
No heat exhaustion to shatter his nerves,
Soothed by the gently rhythmic sway.

He is much wiser than humans who rush
Hither and dither, despite the heat.
Conserving his energy, frog works by night
To render his hungry stomach replete.

Outside my window, I see him at rest
Deep in the cool Syzyguim tree
While, sweltering, I prepare the meals
On a hot stove for my family.

Sybil J. Kimmins.

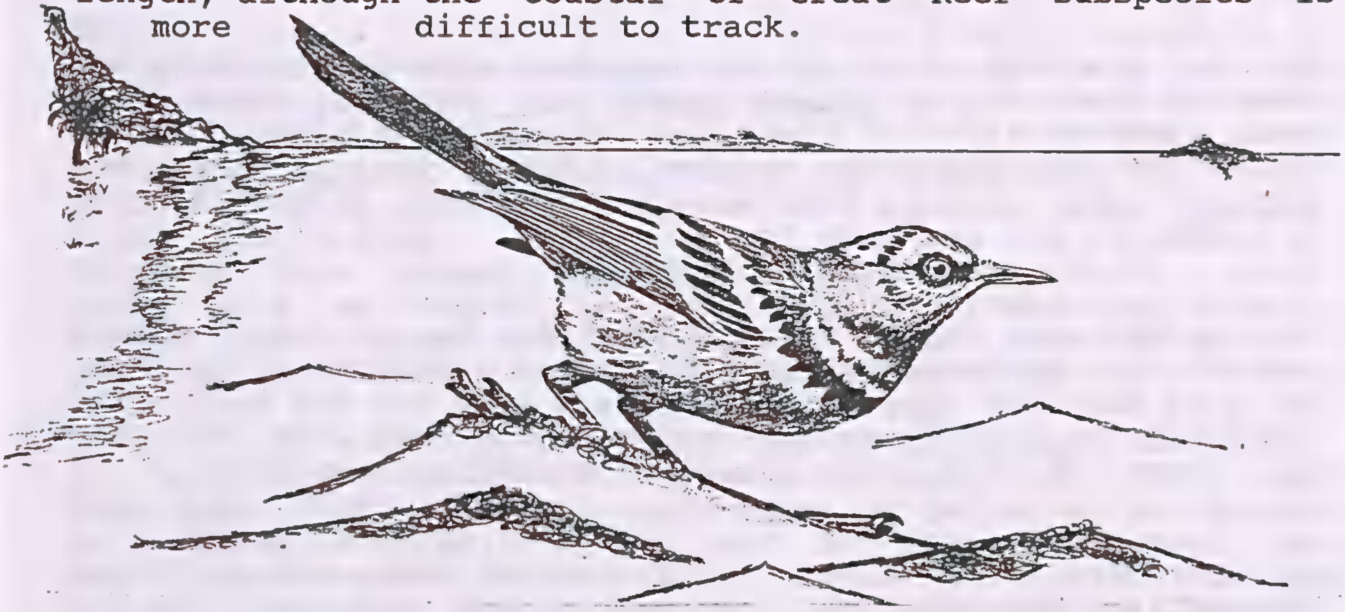
SKIA
Uccana tritatricus

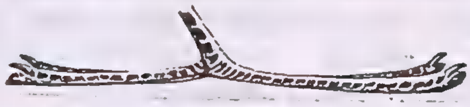
This big footed bird of shores, lakes and reef was once widespread throughout North Queensland but has now been fragmented into several subspecies. The northwestern or 'Carpentaria' race migrates southward (towards the inland sea) while the eastern-highland 'Tinaroo' subspecies is confined to tableland areas. (Total decline in numbers have occurred recently due to loss of habitat).* The coastal subspecies is seemingly now restricted to open water. Concentrations seem to occur around Lake Moondarra in the west, Yungaburra on the Tablelands and at both Fitzroy and Green Islands. The Skia's distinct call is a paniky 'farrk itzar oc' which seems to say 'lookout there's a croc' and 'farrk itzar ark' which is most definitely 'lookout there's a shark!'.

* Ref: 'Tinaroo Report - Jnl. 198' - This issue.

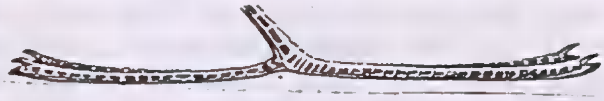
OBSERVATION HINT: In winter, Skias are often seen from the decks of pleasure cruise boats.

IDENTIFICATION: The various races can be separated by the foot length, although the Coastal or Great Reef subspecies is more difficult to track.

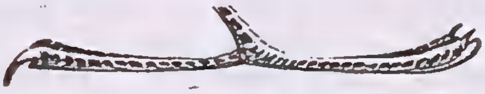




'COASTAL' OR 'GREAT REEF' SKIA



'EASTERN-HIGHLAND' OR 'TINAROO' SKIA



'WESTERN' OR 'CARPENTARIA' SKIA

NOTES ON AGGREGATIONS OF *TIRUMALA HAMATA HAMATA* (MACLEAY) (LEPIDOPTERA : *NYMPHALIDAE*) AT COOKTOWN.

By: J.A. McLean

The common vernacular name of Blue Tiger applies to one or more ubiquitous North Queensland butterflies which also occurs across northern Australia and down the east coast. In Queensland the adults are sometimes abundant and in certain areas tend to accumulate in vast numbers (Common & Waterhouse 1981).

The earliest reference to an aggregation of *T. hamata hamata* in Australia can be found in Sir Joseph Banks' Journal of the Endeavour voyage. This relates to 29th May, 1770 at Thirsty Sound, which is a channel separating Quail and Long Islands from the mainland about midway between Mackay and Rockhampton. 'The eye could not be turned in any direction without seeing millions and yet every branch and twig was almost covered with those that sat still'. (Common & Waterhouse 1981). Later, Phillip Parker King noted similar numbers near Townsville in June 1819 (Monteith 1982). In more recent time Smithers (1983) mentions clustering (aggregation) of this species from Townsville 1968-69 and Coen, June 1971, Mission Beach, April 1971 and Magnetic Island, April 1973.

For 10 years prior to 1994 no apparent mass aggregations was observed involving *T. hamata hamata* from Cooktown, other than small aggregations of less than one hundred (pers. obvs.). Since 1984 only two other species, *Badamia exclamationis* and *Euploea core corinna* have exceeded estimates of one thousand in number at any one time (pers. obvs.). During mid April 1994, 10,000 quiescent *T. hamata hamata* were observed clustering primarily on the outer dead as well as live twigs of shrubs and small trees, 1-3m from ground level, at the western side of Grassy Hill (within 650m of the Post Office). The area measured approximately 220m X 300m and was moderately vegetated, reasonably shaded and protected from wind. By 2nd May, 1994 the area was almost void of these butterflies. A search the following day approximately 1km to the south-east and some 400m east of the Botanical Gardens, revealed an aggregation of vast numbers. Many tens of thousands of these butterflies were involved, perhaps as many as 1.1 million ><. They were more compact than those from the previous site and were clustering on dense vegetation along a shaded, well sheltered creek bed and adjacent areas. This small creek faces the south-east and has a slight gradient but, to the north abruptly escends, where an increase of granite boulders prevail. The main concentration of butterflies measured about 950m in length and varied from between 120-15m in width, by 5m in height, somewhat in the form of a funnel with the spout facing north. When disturbed, part of the multitude would take to the air temporarily, then re-settle and once again become quiescent.

Vegetation on which they rested consisted mainly of small trees of *Dillenia alata*, *Randia sessilis*, *Carallia brachiata*, Buchanania arborescens and miscellaneous shrubs. Some weeks later they also utilised a stand of Bambusa sp.

Over the following five months a number of visits were made to the study area noting fluctuations with both number and location. These are summarized in Table 1. The majority of movement fluctuations occurred to the north and south, while the least was from the western quarter. Maximum numbers were estimated between the 3rd and 28th May, 1994. It is not known when the influx commenced, other than it was sometime after the 18th February, 1994.

On most visits a few Euploea core corinna and odd E. tulliolus tulliolus, Hypolimnas bolina nerina and H. alimena lamina were noted associated with T. hamata hamata at both major sites mentioned. Minor aggregations of T. hamata hamata have also been observed elsewhere clsoe to Cooktown. On 10th May, 1994, 500 were clustering with similar numbers of E. core corinna, 7km south of town at Keatings Lagoon. Three small aggregations were also noted between the 4th and 22nd June, 1994 in heathland swales at Northshore where from 50-200 T. hamata hamata were clustering. During March, 1991 only 100 were seen from this same area.

The function of the aggregation behaviour itself appears to be one of group reinforcement of the natural defences of the individual insects. T. hamata hamata have chemical defences against predation in the form of toxic body fluids which they derive from toxic food plants of the Asclepiadaceae Family (Monteith 1982).

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MONTEITH, G.B. 1982. Dry Season Aggregations of Insects in Australian Monsoon Forests. Mem. Qld. Mus. 20(3): 533-43. pl.1.

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TABLE 1.

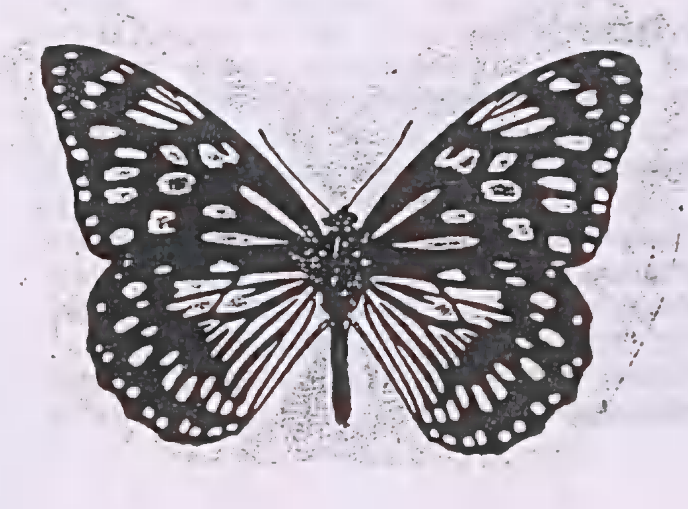
(Note. Numbers and area are only approximate).

Date	Aggregation	Notes
17.4.94	10,000	Observed at the westen side of Grassy Hill.
3.5.94	Tens of thousands perhaps 1.1 million	Observed 400m east of Botanical Gardens. Area 950m X 120-15m. Dense numbers along creek and adjacent areas.

17.5.94	As above	As above.
28.5.94	Tens of thousands	Same area but numbers decreasing.
10.6.94	10,000	Majority have moved to the southern sector.
18.6.94	40,000	Mainly at southern sector. Now utilising a Bambusa stand. Few towards the northern sector.
23.6.94	40,000	As above.
2.7.94	40,000	Scarce from most southern sector.
10.7.94	30,000	As above.
17.7.94	30,000	As above. Clustering area 500m X 120-15m.
30.7.94	20,000	Only at southern sector. Area 300m X 120m.
17.8.94	15,000	Southern sector, but some have returned to northern sector.
4.9.94	15,000	Southern sector but spreading slightly to the south-east quarter at the edge of heathland swales.
11.9.94	5,000	As above.
18.9.94	10,000	Extending slightly to the southern and northern sectors.
25.9.94	3,000	Present mainly at the south-east quarter in heathland swales. Area 150m X 120m.
2.10.94	1,500	As above.
9.10.94	1,000	As above. Area 100m X 100m.

OTHER MINOR SIGHTINGS

19.3.91	100	In shaded heathland swales, Northshore.
4.5.94	50	As sbove
10.5.94	500	7km south Cooktown at Keatings Lagoon. Communal with similar numbers of E. core corinna.
2.6.94	550	In heathland swales, Northshore. Two aggregations of 250 each, and a third containing 50. Each site about 250m apart. All sites deserted by 28.6.94.



HOW TO ELIMINATE FERAL PIGS FROM A 'RARE FRUIT' ORCHARD.

With Permission - BY: Christine Gray

" Eradicate, where possible, feral animals and weeds which are a hazard or threat to natural and managed ecosystems".

(Extract from 'National Conservation Strategy for Australia').

Feral pigs are one of the biggest pest problems in Austalia. They do untold damage to crops, to habitats of our native wildlife and also cause severe soil erosion in croplands, along creeks, gullies and rainforests.

Below is how one pig problem was overcome:

In the early mornings, especially after rain, walk around the orchard and inspect the fruit trees for signs of pig damage. In the orchard it could be either pushed up soil, big hoof marks or little ones, fruit pulled off branches, limb breakage, or pawpaw trees pushed over with fruit, leaves and trunks consumed.

Take note of what type of fruit the pigs are mainly eating.

Proceed up to shed where fishing gear is kept. Rummage through fishing gear for old line. Take out a few hundred yards of line on big reel. Also required is one long sharp knife.

Make one's way back down to orchard. Pull off some fruit from the tree the pig favours. Take knife and make one single hole through fruit.

Cut lengths of short line and tie in one knot to main length on reel. Pull each end of short line through holed fruit and tie.

Place fastened fruit on ground in tempting arrangement around tree. Wind out main line on reel as one walks toward house. Throw fishing reel up through open bedroom window. Go inside house into bedroom, pick up reel and wind up line till taut. Place reel on chair on top of rug on floor. (No need for rug if carpet). Wait for night-time. Have shot-gun and torch ready.

Line will give a jerk and topple to floor, waking one up with fright. (This method saves one waiting in orchard).

Pig! Pig! Jump out of bed. Wake up fast. Grab shot-gun and torch. (S.G's the best for quick knock down). Proceed down to orchard in dark. Think like pig. Do not let pig get one's scent. Quietly sneak behind nearby tree. Listen for chomping noise. Aim in that direction. Flash torch. Fire. Bang! One pig dead. If one's a good shot - can sometimes get two with one shot.

With adrenalin still flowing and much heart pumping, proceed back to house and reset line. Hope to get back to sleep. In the morning, get wheelbarrow and shovel. Drag, pick up and shove pig into wheelbarrow. Wheel to newly planted tree. Dig one big hole - not too big and not too close. Bury pig.

Excellent fertilizer!

Wait for tree to fruit and repeat process.

WILLIE WAGTAIL

Willie Wagtail standing
On a pumpkin leaf,
Reminds me of a Lotus Bird
Who never comes to grief
While walking waterlily leaves
On Queensland's calm lagoons.

Willie Wagtail searching
In a pumpkin patch
For moths and flies this morning,
Seems to be a match
With Lotusbirds, long legged,
Long-toed, so un-like Willy!

Willie Wagtail wobbling
Insecurely there,
Spreads his wings quite suddenly
And flies into the air
While challenging a Peewit
With an impudent stare.

Sibil J. Kimmins.

PHYLLANTHUS FLOWERS

(Local Native Tree)

Pale Pink Phyllanthus flowers drip
from the bushy tree by my stairs.
Like tiny flakes of snow, they fall.
(Or perhaps like falling stars?)
Microscopic creamy blooms
hang from below the sheltering leaves
on hair-thin stalks in millions,
till the wind releaves the tree
of its load, and the grass beneath
struggles to hold green blades
above the smothering carpet
as it disintergrates and fades.

Sibil J. Kimmins

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